REMARKS

Claims 1, 2 and 4-22 are present in this application. Claims 8-21 have been withdrawn. Claim 23 has been canceled

Claim 1 is an independent claim.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

§ 103(a) Rejection – Jacquet, Ishikawa, Giacomelli

Claims 1, 3-7 and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,283,799 (Jacquet) in view of JP 02-137383 (Ishikawa) and Giacomelli, "Noise enhancement of telegraph signals in vertical cavity surface emitting lasers". Applicants have amended claim 1. Applicants respectfully traverse this rejection based on the claims as amended.

The Examiner suggested amending the claims to include structural features not present in the cited prior art as well as point out how structural differences account for a change in device operation or output (Office Action at page 3 at bottom paragraph).

Thus, in order to clarify the distinguishing structural features of the present invention, Applicants have amended claim 1:

to recite "an active layer …to increase an amplitude of an optical output,"

to emphasize the structural aspects of the electrode of a first polarity as being "a stochastic resonance electrode of a first polarity configured to inject a current generated by superimposing a noise current on a modulation current into said active layer and to control hysteresis by adjusting the intensity of said modulation current and the intensity of said noise current with respect to each other," (see Figs. 1, 8: p-electrodes 1 and 2, constant current source 26, modulation current supply circuit 27, noise supply circuit 28, and coupling unit 29) and

to emphasize the structural aspects of the electrode of a second polarity as being "a stochastic resonance electrode of a second polarity." (n-electrodes 5 and 6)

In a new argument presented in the body of the rejection (last sentence on page 5 of the Office Action), the Examiner alleges that the active layer would inherently respond to the input currents and would produce the stated optical output. In addition, the Examiner alleges that the term "increased" is a relative term such that having no current applied to the device, then applying the modulated current would cause the amplitude of the output to increase.

Applicants disagree. As recited in claim 1 as amended, the electrode of a first polarity is "configured to inject a current generated by superimposing a noise current on a modulation current into said active layer and to control hysteresis by adjusting the intensity of said modulation current and the intensity of said noise current with respect to each other.

The Office Action alleges that Giacomelli teaches a bistable laser wherein current is generated by superimposing a noise current on a modulation current and the intensities are taught to be adjusted to increase amplitude of the optical output (disclosed as optimized to the resonance point). Applicants submit that this statement is an incorrect interpretation of the teaching of Giacomelli.

Giacomelli discloses "An improvement of the quality of the output signal is observed as the amount of noise is increased, up to an optimal (resonant) value." In other words, Giacomelli teaches increasing the amount of noise up to an optimal value. Giacomelli only shows a fixed level of optical output, even though noise is coupled with a laser input current.

Applicants submit that Giacomelli does not teach or suggest an electrode for adjusting the intensity of said modulation current and the intensity of said noise current with respect to each other such that an active layer increases the amplitude of the optical output.

Furthermore, Jacquet discloses control of hysteresis as a function of current injected into the laser through power supply electrode E1 as well as control current I2. However, Jacquet also does not disclose the claimed function defined by a relative adjustment of the intensity of the modulation current and noise current.

For at least these reasons, Applicants submit that Jacquet, Ishikawa, and Giacomelli, either alone or in combination, fail to teach or suggest these claimed features.

Applicants request that the rejection be reconsidered and withdrawn.

CONCLUSION

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Robert Downs** Reg. No. 48,222 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.147; particularly, extension of time fees.

Dated: April 23, 2008

Respectfully submitted,

By Robt Downs #48222

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